DOCUMENT RESUME

ED 155 867 EC 110 768

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TITLE Hyperactivity and Cuing Responsivity in Learning Disabled Boys.
PUB DATE Mar 78
NOTE 11p.; Paper presented at the Southwest Society for Research and Human Development (Dallas, Texas, March 17, 1978)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Attention Control; Attention Span; Childhood; *Cognitive Processes; *Cues; Exceptional Child Research; *Hyperactivity; *Learning Disabilities

ABSTRACT

Performances of 12 hyperactive learning disabled (LD) boys and 12 non-hyperactive LD boys were compared with two groups of 12 normal control boys (6-11 years old) on a visual search task. Ss were asked to locate a target letter appearing within an array of randomly selected letters during cued and non-cued trials. Results indicated that in the absence of visual cues, the hyperactive LD Ss did not show an organized search pattern similar to that observed for non-hyperactive LD and normal Ss. Hyperactive LD Ss performed as well as non-hyperactive LD Ss but not as well as normal Ss when given visual cues. Findings suggested that attention of hyperactive LD Ss is disrupted by the child's cognitive inability to analyze, organize, and plan. (CL)

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ED155867

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Paper Presented at SWSRHD

March 17, 1978

Dallas, Texas

Hyperactivity and Cuing Responsivity in Learning Disabled Boys

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Abstract

Recently, evidence has suggested that the underlying problem of the hyperactive child is an inability to structure the rudimentary functions of attention (e.g., analyzing, organizing and planning). Whether this inability is the result of a cognitive dysfunction, or the result of excessive motor activity, or both, is unclear. In the present study, one aspect of the rudimentary functions of attention, responsivity to visual cues, was examined in hyperactive learning disabled, non-hyperactive learning disabled, and normal controls by means of a visual search task developed by Neisser (1964). The results indicated that, in the absence of visual cues, the hyperactive learning disabled boys did not show an organized search pattern similar to the pattern observed for the non-hyperactive learning disabled and normal control boys. However, when presented with an organized strategy through the provision of a visual cue, hyperactive learning disabled boys performed as well as non-hyperactive learning disabled boys but not as well as normal controls. Evidently, this rudimentary function of attention is not disrupted by the motoric overactivity of the hyperactive learning disabled child. Rather, as suggested by Douglas (1972), it is disrupted by the child's cognitive inability to structure the beginnings of attention, e.g., analyzing, organizing, and planning.

E G E J U R

M S E E G M

L U M G I I

A U M S F R

A K B F V S

E B A I T B

E I I J J F

J C C P J E

C R L E V D

R M C I P I

S E J S R A

P F G H J P

D H H H L V

S M V P J D

M R I R A U

B J I P A V

H G H U G M

I J B R A L

U F J C D I

B M J P I J

B V V C P P

L M V U E D

H P D V H S

A J I B I L

B D A D T E

Table 1

Mean Latencies for Non-Cue and Cue Trials

(in seconds)

	Trials		
	Non-Cue	Cue	M
Hyperactive Learning Disabled			
M	19.33	7.33	13.33
Controls (Hyperactive Learning Disabled)			
M	12.51	4.00	8.26
Non-hyperactive Learning Disabled			
M	17.34	8.04	12.69
Controls (Non-hyperactive Learning Disabled)			
M	13.57	4.04	8.80
Overall Mean			
M	15.69	5.85	10.77

Table 2

Mean Latencies for Area (in seconds)

	Area				
	I	II	III	IV	V
Hyperactive Learning Disabled					
M	11.52	13.75	13.77	16.34	11.28
Controls (Hyperactive Learning Disabled)					
M	7.70	9.54	6.44	10.27	7.33
Non-hyperactive Learning Disabled					
M	7.41	12.70	16.39	12.08	14.88
Controls (Non-hyperactive Learning Disabled)					
M	8.79	11.24	6.44	10.24	7.31

Hyperactivity and Cuing Responsivity in

Learning Disabled Boys

Learning disabilities have received a great deal of interest in recent years. Much of this interest has been generated by an increasing recognition of their incidence. They are estimated to affect up to 15% of the school population in some urban areas.

Of the various symptoms of learning disabilities, attentional deficiency seems to be the most debilitating for school performance. Although extensive research on the role of attentional deficits in learning disabled and hyperactive children exists, only a few studies have been directed towards clarifying what specific dysfunctions of attention affect which types of children. For example, Douglas (1972) has shown that hyperactive children are not significantly more distractible than normal children, but their underlying problem is an inability to structure the rudimentary functions of attention (e.g., analyzing, organizing and planning). Whether this inability is the result of a cognitive dysfunction, or the result of excessive motor activity, or both, is unclear. The present experiment provides evidence that this deficit in the rudimentary functions of attention is the result of a cognitive inability to structure the beginnings of attention rather than the result of excessive motor activity.

To examine the rudimentary functions of attention, the performances of twelve hyperactive learning disabled boys and twelve non-hyperactive learning disabled boys, and two groups of twelve normal control boys were compared using a visual search task devised by Neisser (1964).

The ages of the children ranged from six years, six months to eleven years, eleven months, with a mean age of nine years, seven months for the hyperactive learning disabled boys and their normal controls, and a mean age of nine years, three months for the non-hyperactive learning disabled boys and their normal controls. Diagnoses of learning disability were based on an extensive test battery evaluating auditory skills, motor and perceptual skills, intellectual and academic skills, and personality adjustment. Diagnoses of hyperactivity were made concurrently by a pediatric neurologist and a pediatric psychologist who based their judgments on medical and developmental histories, behavioral observations, and the Connor's Scale of Hyperactivity. The normal control boys were matched with the hyperactive and non-hyperactive learning disabled boys on age, intelligence and socioeconomic status. An example of the visual search task is presented on page 3 of the handout.

The visual search task involved subjects locating a target letter (K) which appeared once within an array of randomly selected letters. Each array contained twenty-five rows of six letters each. The target letter appeared twice in each fifth of the array in the odd-numbered rows (excluding rows 1, 11, and 25). Each fifth of the array contained five rows of letters. Both pretrial cuing and non-cuing trials were given. On the non-cued trials, the arrays alone were presented. On the cued trials, the arrays were preceeded by a visual marker which indicated the area of the array which would contain the target letter. The area of the array blackened out by the visual marker covered the five rows in that fifth of the array. Four blocks of five trials each were presented; two blocks of non-cued trials and two blocks of cued trials were given in a random order.

The logic of the experiment was as follows: on the one hand, if the underlying problem of hyperactive learning disabled boys was a cognitive inability to structure the rudimentary functions of attention, then normal and non-hyperactive learning disabled boys would be expected to show an organized search pattern while the hyperactive learning disabled boys would not. On the other hand, if the underlying problem was motoric overactivity, then the hyperactive learning disabled boys would not be expected to use the cues on the cued trials as effectively as either the non-hyperactive learning disabled or normal control boys.

In general, the results revealed significant main effects for groups indicating that normal controls exhibited significantly shorter latencies than hyperactive or non-hyperactive learning disabled boys. Turning to Table 1, one can see that normal controls exhibited mean latencies of 8.26 sec. and 8.80 sec. while hyperactive and non-hyperactive learning disabled boys exhibited mean latencies of 13.33 sec. and 12.69 sec., respectively. There were no significant differences between the latencies of hyperactive and non-hyperactive learning disabled boys. Significant main effects for cuing indicated that latencies were significantly shorter in the cuing trials than in the non-cuing trials. (Mean latencies were 15.69 sec. for non-cue trials and 5.85 sec. for cued trials.)

On the cued trials, normal controls exhibited shorter latencies than either the hyperactive or non-hyperactive learning disabled boys. The normal controls had latencies of 4.00 sec. and 4.04 sec. while the hyperactive and non-hyperactive learning disabled boys had latencies

of 7.33 sec. and 8.04 sec., respectively. However, no significant differences between hyperactive and non-hyperactive learning disabled boys were obtained. Rather, the hyperactive learning disabled boys used the cue to decrease latencies as effectively as non-hyperactive learning disabled boys. This implies that the excessive motor activity of the hyperactive learning disabled boys did not disrupt the rudimentary functions of attention.

Turning to Table 2, the significant Groups X Area interaction indicated that normal controls and non-hyperactive learning disabled boys exhibited brief latencies when the target letter was at the top of the array (Area I). However, as the latencies continued to be brief for the normal controls as the target letter was presented farther down the array (Areas II through V), the latencies for the non-hyperactive learning disabled boys became greater. This suggests that non-hyperactive learning disabled boys initiated a visual search pattern similar to the normal controls, but were unable to sustain it. The hyperactive learning disabled boys, on the other hand, did not show this trend. Rather they exhibited long latencies regardless of the position of the target letter in the array. This implies the lack of an organized search pattern.

In summary, the underlying problem of hyperactive learning disabled boys seems to be a cognitive inability to structure the rudimentary beginnings of attention (e.g., analyzing, organizing and planning). Hyperactive learning disabled boys evidenced this inability by failing to initiate an organized search pattern similar to the pattern observed for the non-hyperactive learning disabled boys or the normal controls.

However, when presented with an organized strategy as provided by a visual cue, hyperactive learning disabled boys performed as well as non-hyperactive learning disabled boys, but not as well as normal controls.

Several implications for the treatment of problems involving the rudimentary functions of attention are apparent. Teachers should be aware that one problem of hyperactive learning disabled children is their inability to organize attentional strategies as quickly as normal children. Techniques such as increasing the saliency of cues, or modeling and demonstrating attentional strategies have been used successfully in developing "learning how to learn" techniques in these children (Keogh and Margolis, 1976). Additional research directed toward identifying which functions of attention are disrupted by hyperactivity and learning disabilities is needed to further our understanding of the attentional deficiencies of these children and the best techniques for their remediation.